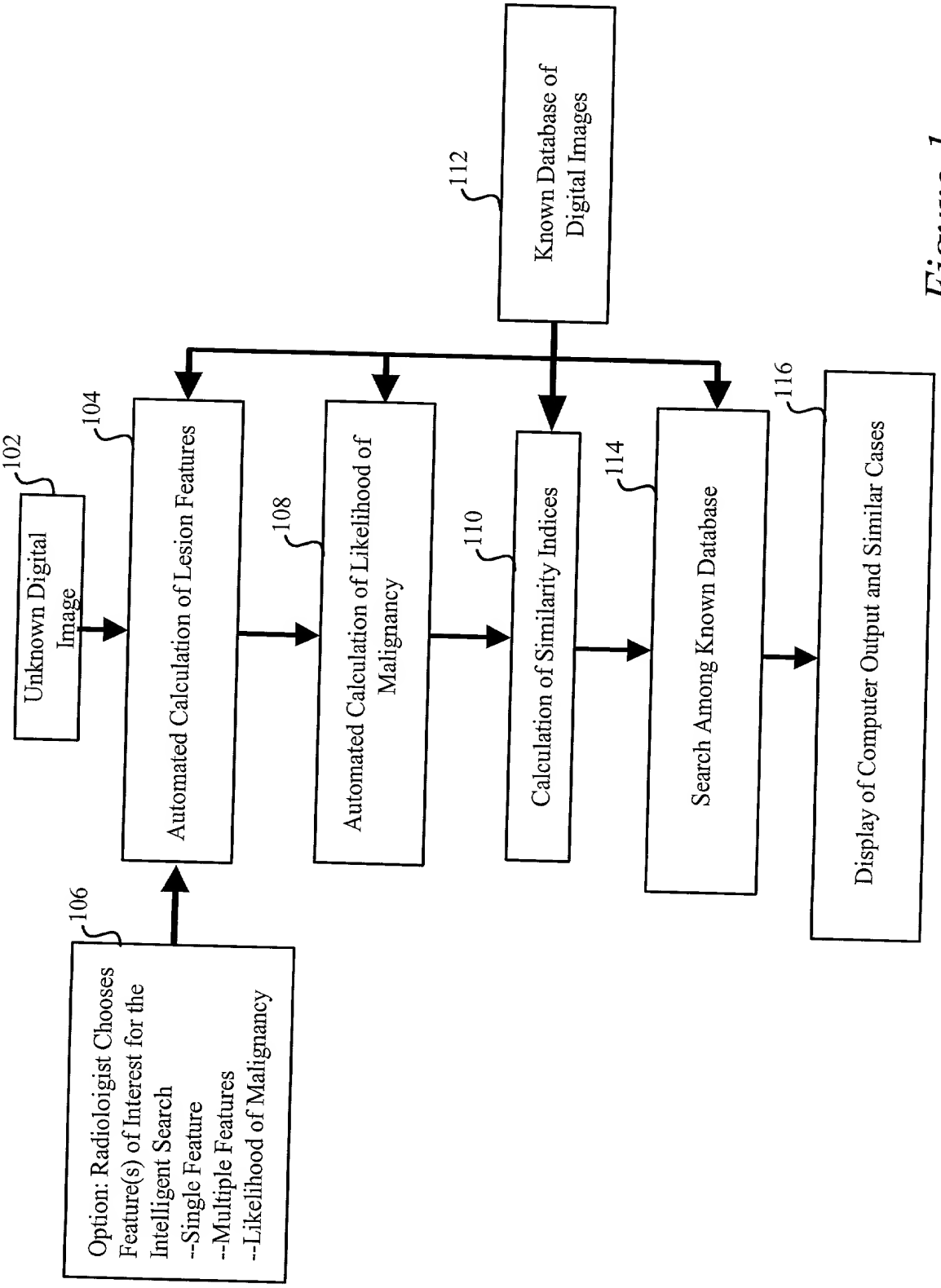
Known Database of Digital Images
112
Unknown Digital Image
102
Automated Calculation of Lesion Features
104
Automated Calculation of Likelihood of Malignancy
108
Calculation of Similarity Indices
110
Search Among Known Database
114
Display of Computer Output and Similar Cases
116
Option: Radiologist Chooses Feature(s) of Interest for the Intelligent Search
--Single Feature
--Multiple Features
--Likelihood of Malignancy
106

Figure 1

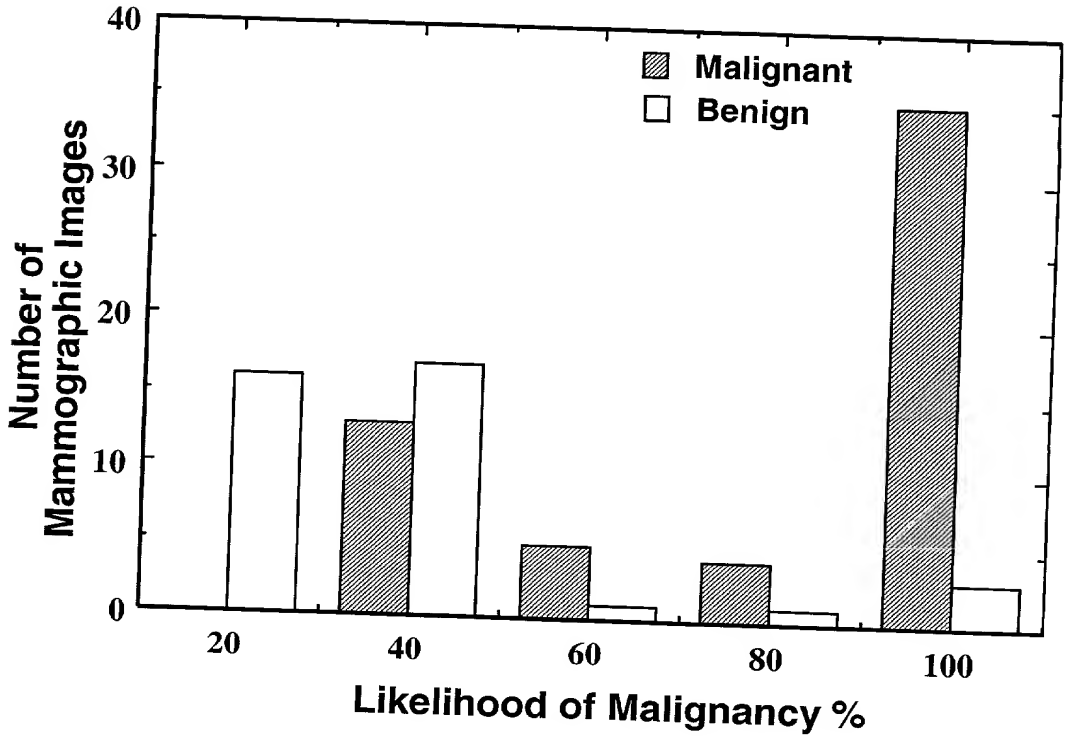

Figure 2

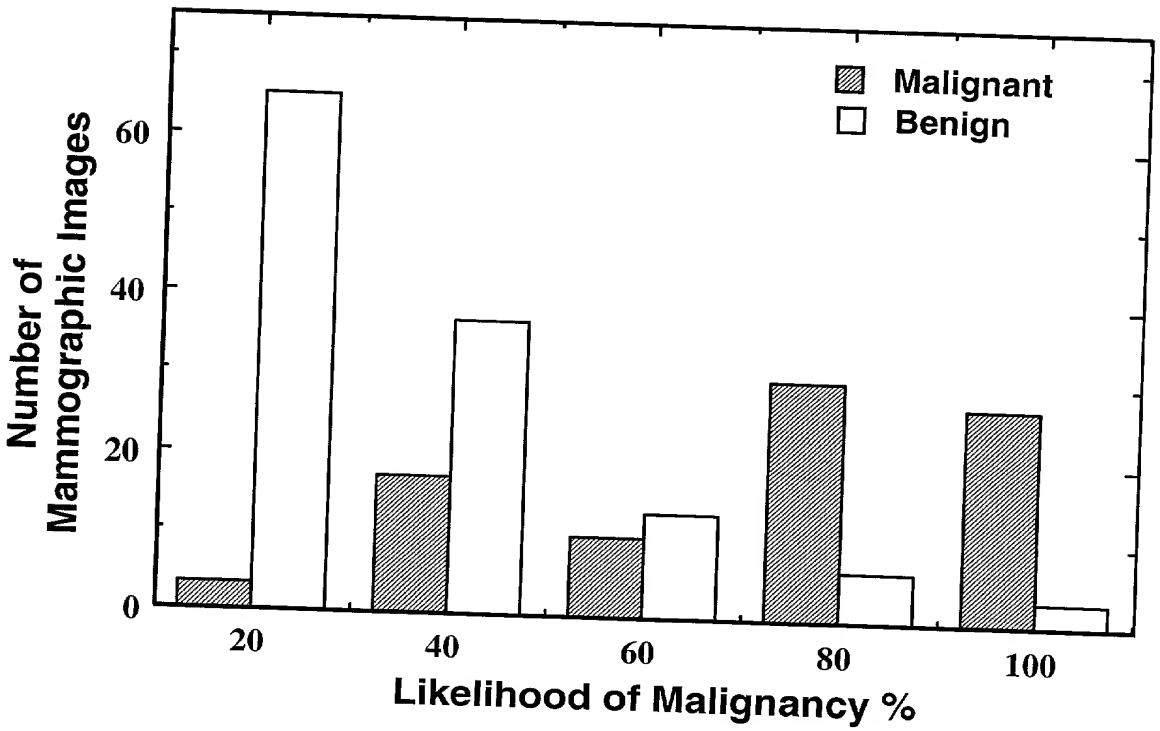

Figure 3

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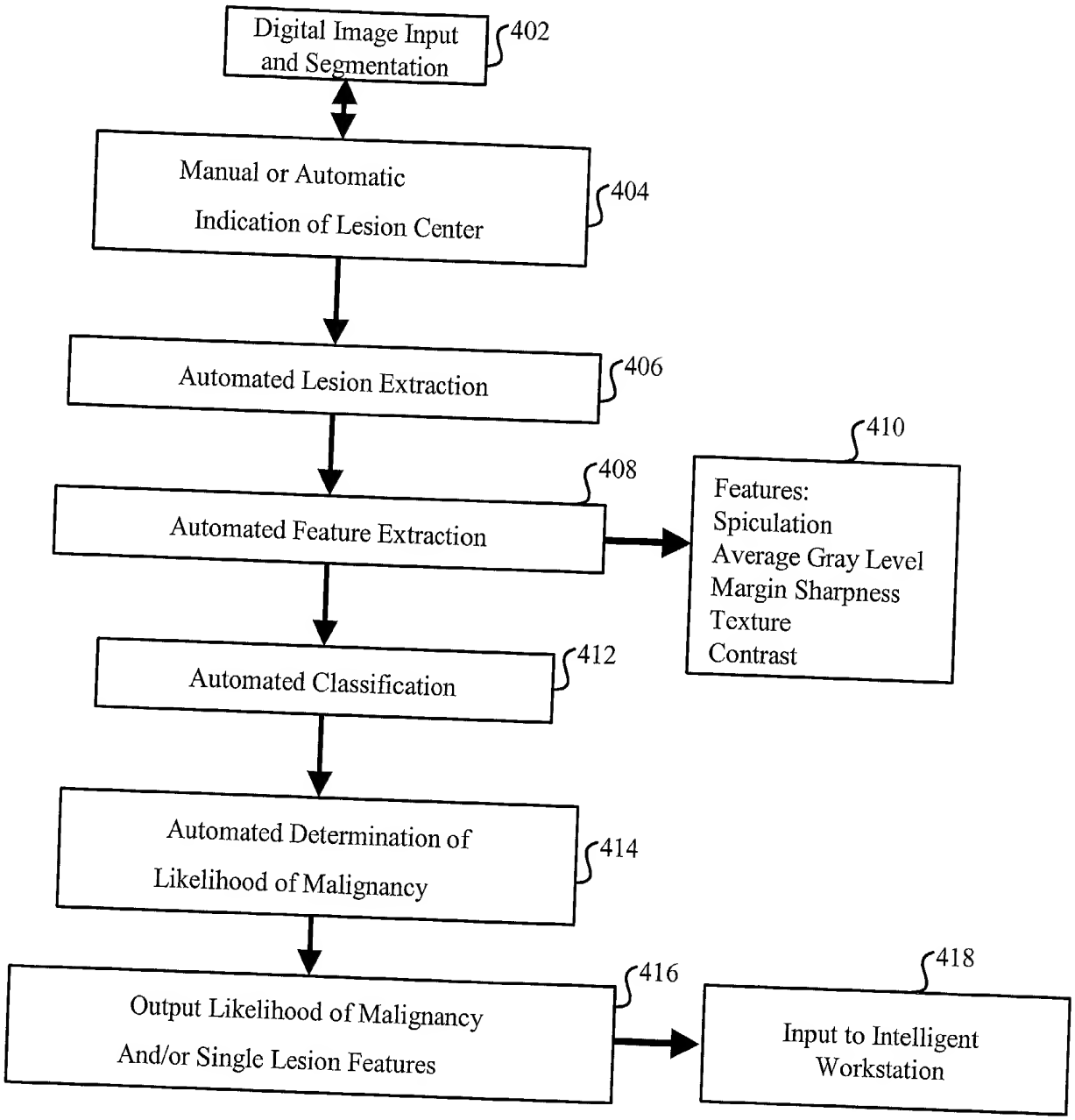

Figure 4

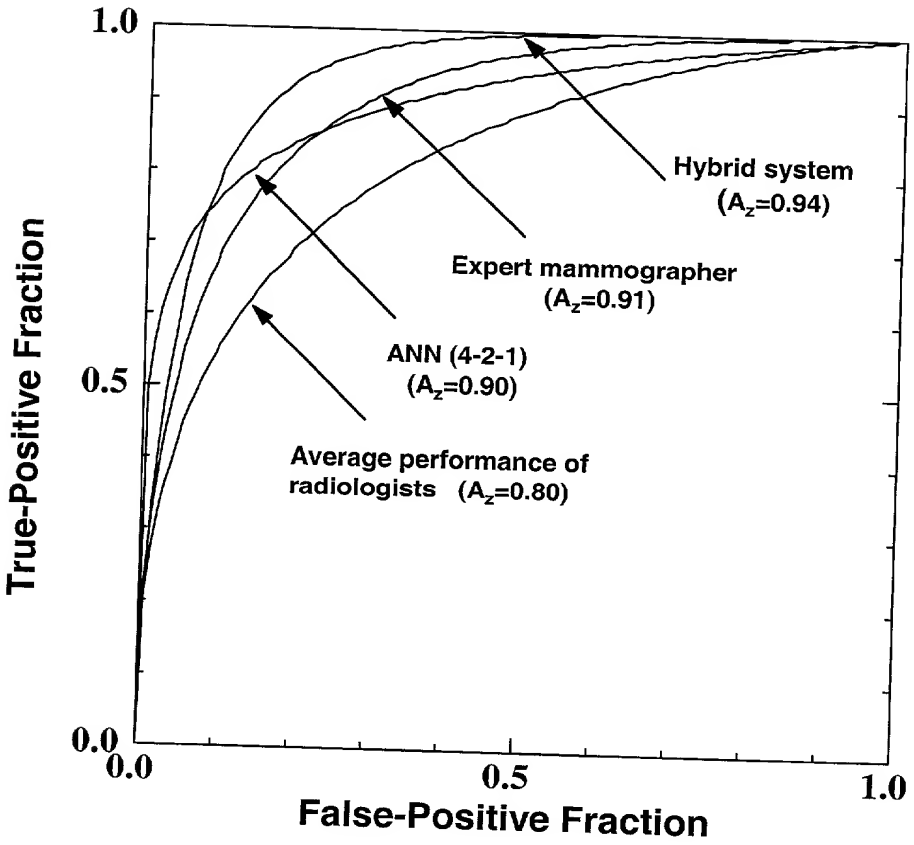
1.0
0.5
0.0
0.0
0.5
1.0
True-Positive Fraction
False-Positive Fraction
Hybrid system
(A_z=0.94)
Expert mammographer
(A_z=0.91)
ANN (4-2-1)
(A_z=0.90)
Average performance of
radiologists (A_z=0.80)

Figure 5

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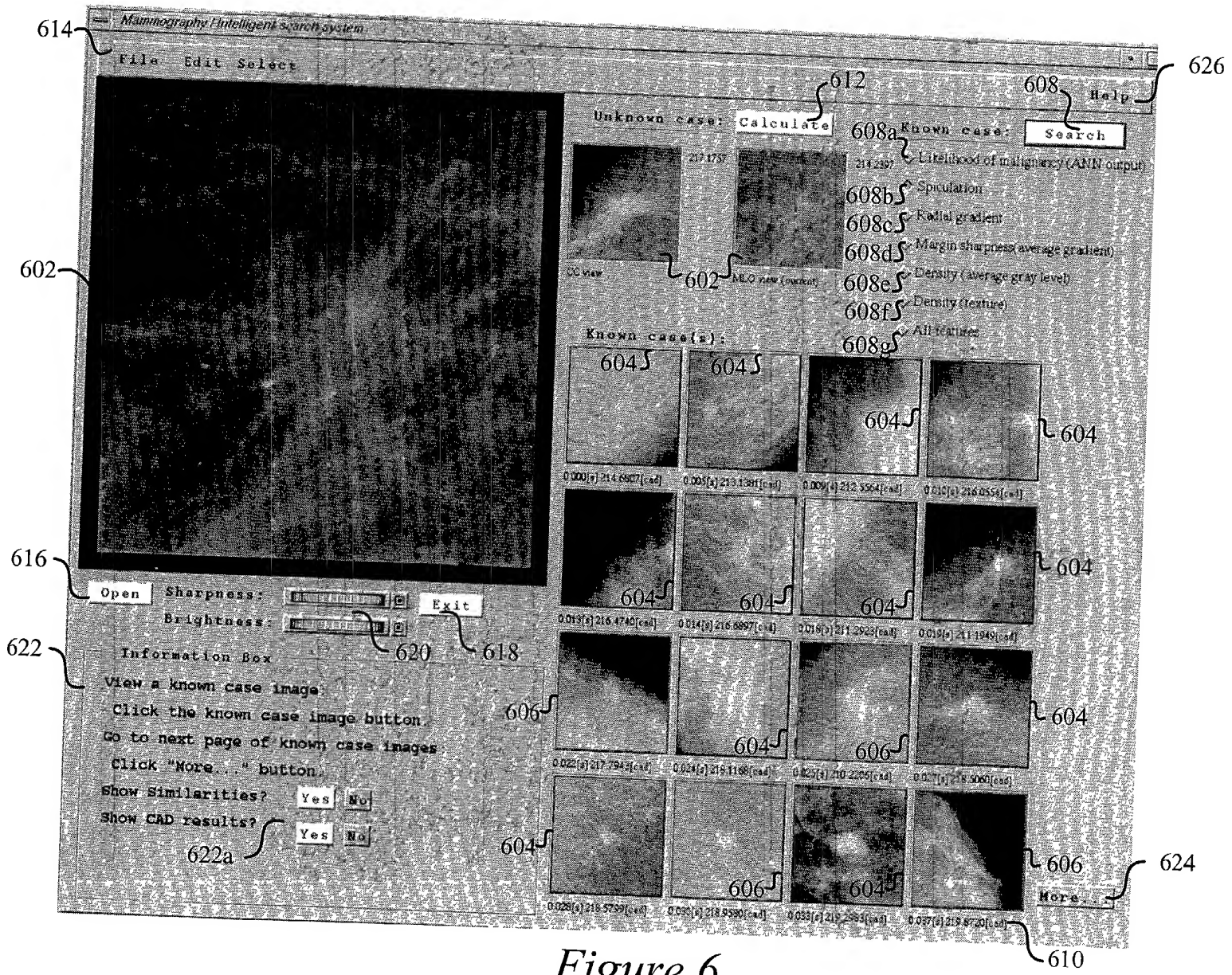

Figure 6

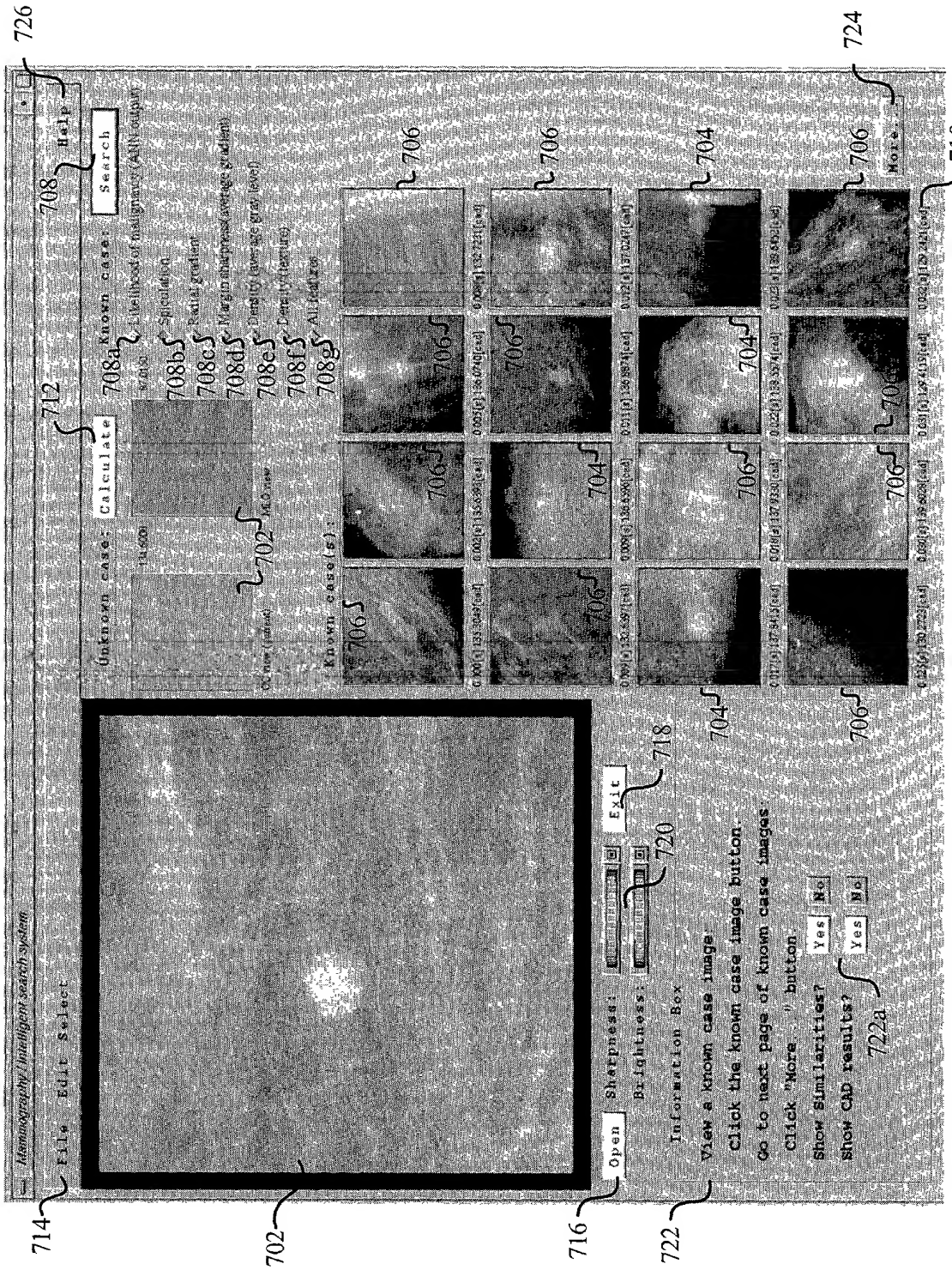
Mammography Intelligent search system
File
Edit
Select
Help
Search
Unknown case:
Calculate
Known case(s):
Open
Sharpness:
Brightness:
Exit
Information Box
View a known case image
Click the known case image button.
Go to next page of known case images
Click "More..." button.
Show similarities?
Yes
No
Show CAD results?
Yes
No
More...
714
726
708
712
708a
708b
708c
708d
708e
708f
708g
702
716
722
718
720
724
710
706
704
722a

Figure 7

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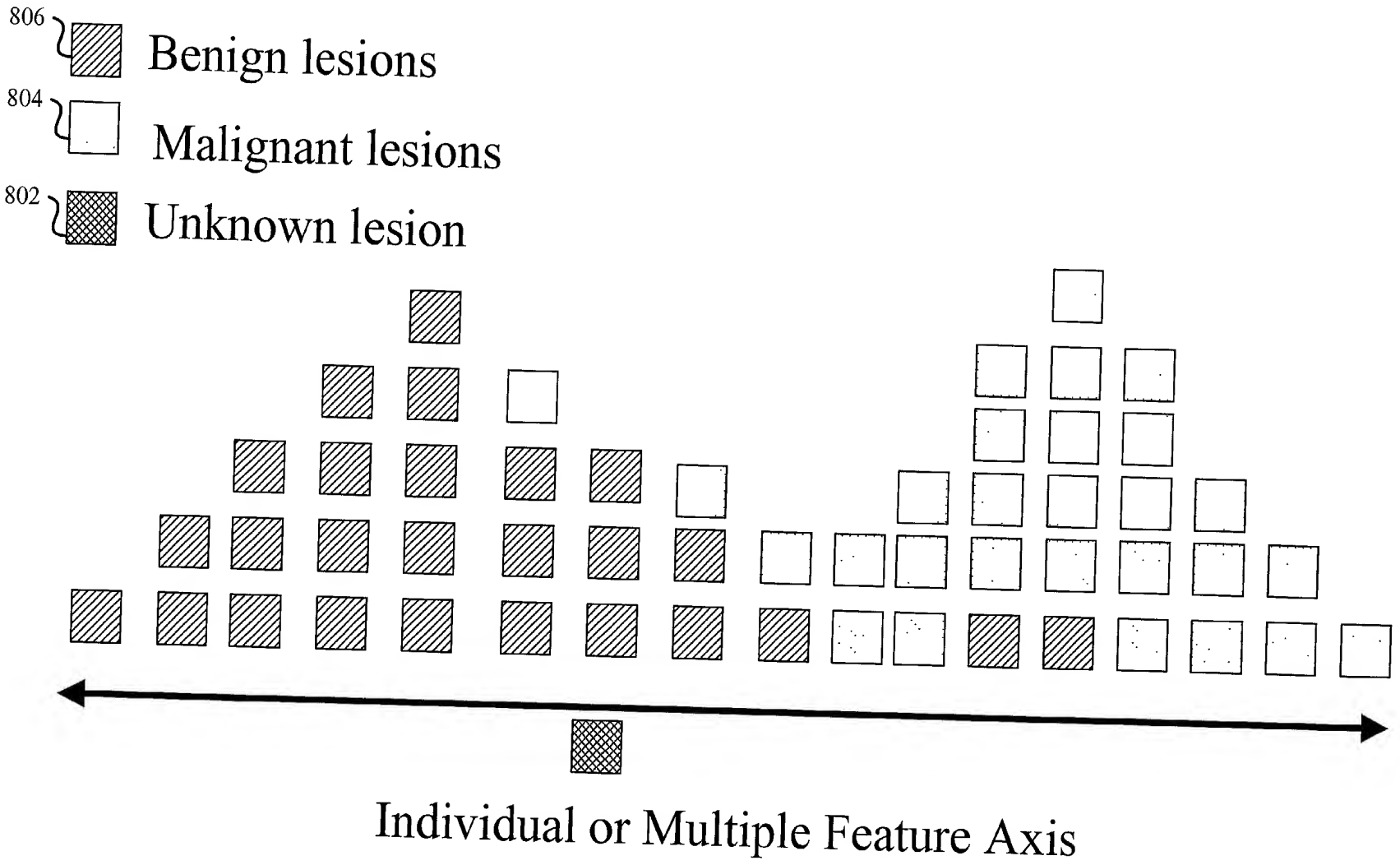
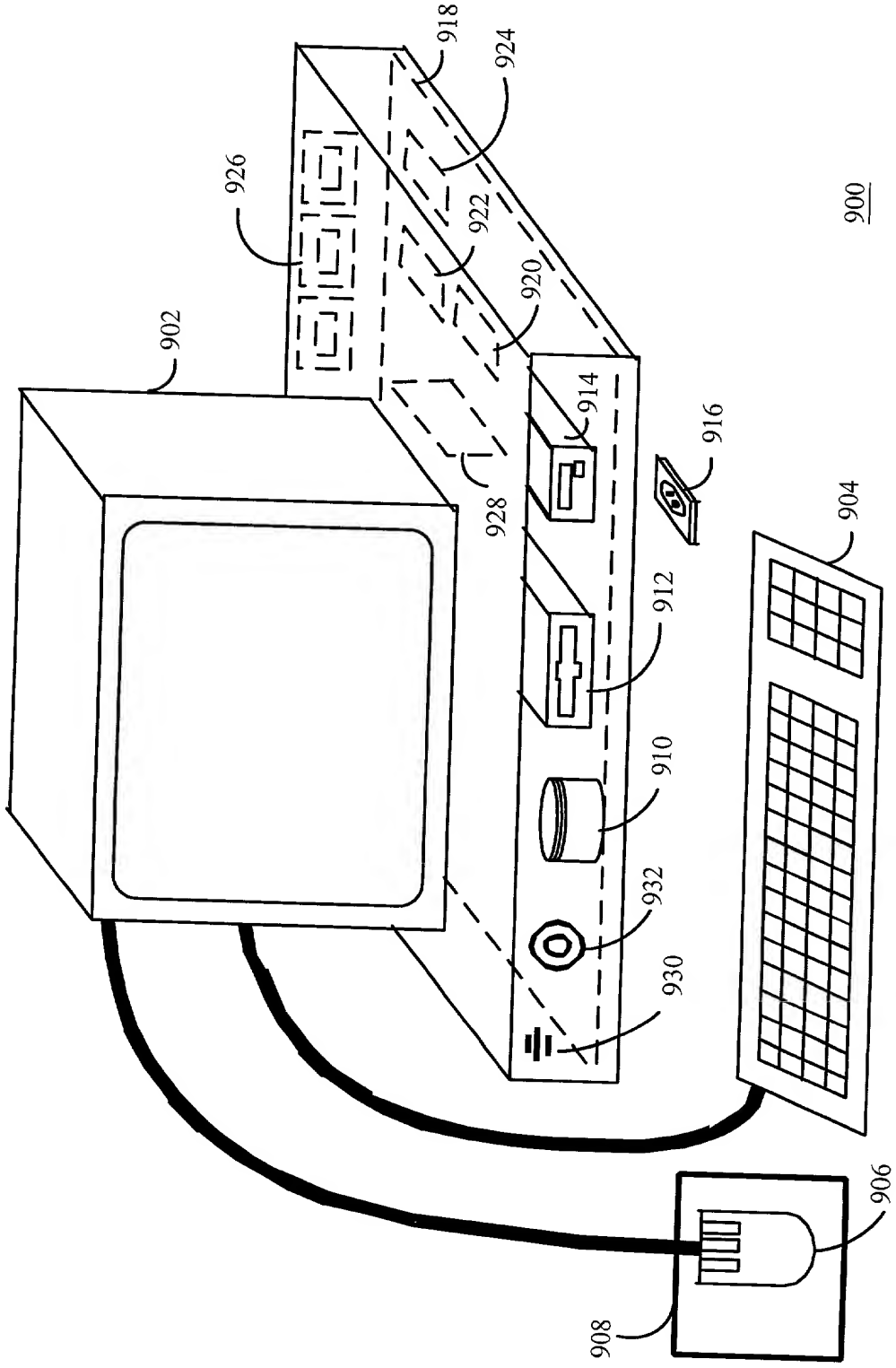


Figure 8


900
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904
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Figure 9